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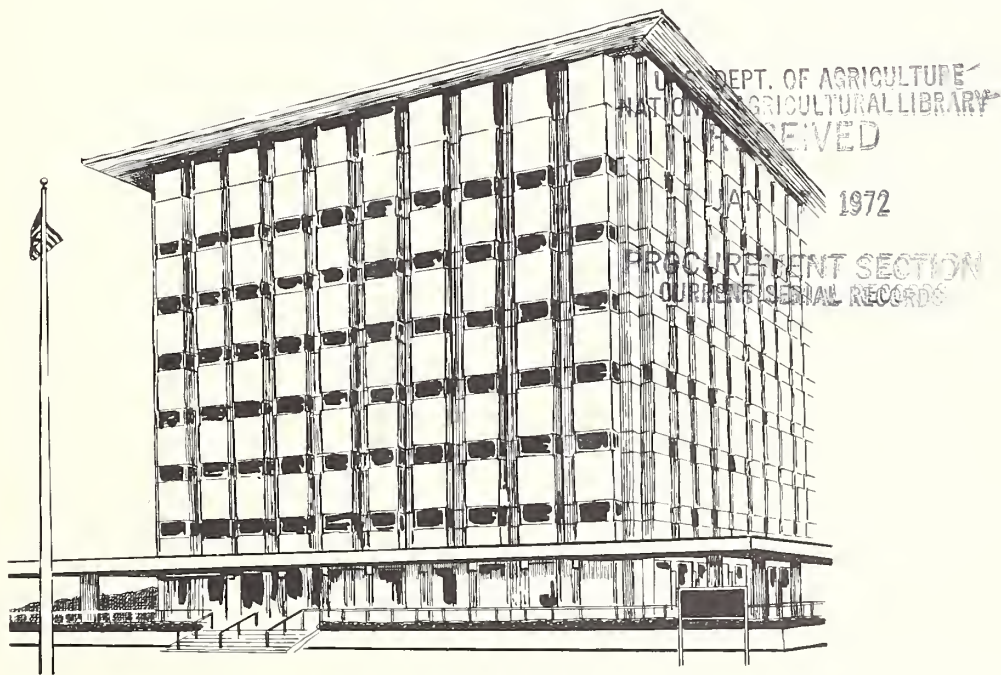


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**PROGRESS REPORT**  
  
of the  
**CONSUMER AND FOOD ECONOMICS RESEARCH DIVISION**  
  
**MARKETING AND NUTRITION RESEARCH**  
  
**July 1, 1971**



Agricultural Research Service  
  
UNITED STATES DEPARTMENT OF AGRICULTURE

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Issued November 1971

Progress Report  
of the  
CONSUMER AND FOOD ECONOMICS RESEARCH DIVISION  
Marketing and Nutrition Research  
July 1, 1971

INTRODUCTION

The goals of research in this Division are to improve the dietary situation, the levels of living, and the home management practices of families in the United States. The research involves:

- Studies of the kinds and amounts of food consumed and of the expenditures for food by different population groups, the food habits of individuals, and the practices of families in the purchase and household use of various foods.
- Development and improvement of procedures for use and care of food in homes and institutions.
- Development of tables of the nutritive values of foods.
- Nutritional appraisal of diets and food supplies.
- Studies of the kinds and amounts of goods and services used for family living by households, of expenditures for these goods and services, and of family practices in their management of financial and other resources.

On the basis of this and other research, guidance materials such as food budgets, dietary guides, and other aids are developed to help families obtain better diets and make the most advantageous use of their money and time resources. Research studies are also carried out to improve and backstop the food assistance programs of the Department.

Research findings are disseminated to the scientific public through technical publications; to teachers and other leaders concerned with helping families and consumers, through semitechnical reports; and to consumers themselves, through popular-type publications. Two periodicals issued regularly by the Division help to disseminate research findings or current information of concern to the groups reached--Nutrition Program News prepared for members of State nutrition committees and other workers in nutrition programs; and Family Economics Review, servicing extension agents, teachers, and other professional workers interested in family and food economics and home management.

The program of the Consumer and Food Economics Research Division is carried out at Hyattsville and Beltsville, Maryland, and under contracts, cooperative agreements, and grants with State experiment stations, universities and private research organizations. The present report summarizes the current program and progress during the period July 1, 1970-June 30, 1971.

Seven examples of recent progress in the Division's research program follow. More detailed information is given in subsequent sections of this report.

Meal planning and food shopping. A new publication, "Your Money's Worth in Foods," brings together information on meal planning and food shopping to help consumers serve nutritious meals to their families while economizing on foods.

Debt repayment and food expenditures. In a study of 343 Oklahoma families, seven cents of each dollar spent on debt repayment were diverted from food. Average yearly debt repayment - \$658 - took  $1\frac{1}{2}$  week's food money from the average family.

Economic status of families. A series of 10 short and easily answered questions resulted from research to develop a simple method of predicting the approximate value of goods and services consumed by rural families. When tested in North Carolina, responses to these questions provided a more accurate measure of consumption, and thus of economic status, than did income.

Recipes for school lunches. A completely updated version of "Quantity Recipes for Type A School Lunches" is to be issued jointly by ARS and the Food and Nutrition Service. In addition to more than 300 recipes, it provides a variety of other information designed to help the school lunch managers prepare meals that supply the kinds and amounts of food boys and girls need to meet the goal of the Type A lunch.

Diet quality of low-income families. Diets of 461 low-income Negro families surveyed in the summer of 1969 in three counties in Mississippi were not as good as the diets of low-income rural nonfarm households in the South in the summer season of the 1965-66 USDA food consumption survey. Diets of the Mississippi families were particularly low in vitamin A, ascorbic acid, and calcium.

Acceptance of fruits and vegetables by students. A pilot study in three locations suggests that acceptance or refusal of children to eat fruits and vegetables was influenced by parental attitudes toward food, parental influence on the child, sensory appeal of the food, appetite conditioning of the child, and socioeconomic level of the family.

Research publications. Publications, papers, and periodicals issued by the Division totaled 82 for the fiscal year 1970-71--23 bulletins, 30 leaflets for special food programs, 20 articles and papers issued, 4 issues each of the periodicals Nutrition Program News and Family Economics Review.



Problems and Objectives

Information about food consumption and dietary levels is essential to effective consumer education in nutrition and food management, to market analyses, and to agricultural policy and program evaluations--both to provide the basis for such evaluations and to measure progress. Needed are periodic surveys of the kinds, amounts, and costs of food consumed by households and individuals in different population groups; surveys of practices of families in the purchase and use of specific foods; studies of factors affecting food choices; nutritional appraisals of diets and food supplies; and studies to develop procedures that maintain nutrient content, texture, flavor, safety, and other qualities during preparation and care of food. To facilitate improvement of the dietary situation, more effective ways of informing people about food and nutrition and of helping them improve their food habits are needed.

Major objectives of the research are to determine--

1. Food consumption patterns of the Nation and of specific population groups.
2. Nutritive value of diets and of the per capita food supply.
3. Household practices in food management.
4. Food habits of individuals and methods for improving them.
5. Improved procedures for food use in homes and institutions.

Progress

Food Consumption and Dietary Levels

Diet quality of households by region and season. Diets in the South and in the spring are more likely to be poor than those in other regions and in other seasons, according to further analysis of data from the 1965-66 Nationwide Household Food Consumption Survey. A fourth of the households in the South surveyed in spring 1965 had diets supplying less than two-thirds of the Recommended Dietary Allowances for one or more major nutrients and thus were rated poor. In the North Central region and the Northeast, there were also more diets rated poor in the spring than in the other seasons, but not as high a proportion as in the South. The incidence of poor diets in the West was slightly higher in summer than in other seasons.

Problem nutrients were ascorbic acid, vitamin A value, and calcium in most of the regions and most seasons of 1965-66. A higher percent of households in the Northeast, South, and West had supplies of ascorbic acid and vitamin A that failed to meet at least two-thirds of the recommendations in spring than in other seasons. Ascorbic acid in the North Central diets also fell below

the two-thirds level most frequently in spring, but the vitamin A problem was a little more frequent in the winter in that area than in other seasons. Relatively low consumption of fruits and vegetables during the spring, particularly in the fresh forms, was associated with the dietary shortages of vitamin A and ascorbic acid.

More diets were below the two-thirds level in calcium in summer than in the other seasons in the Northeast, North Central region, and the South. In the West, spring was the season in which the greatest number of diets were found to be this low in calcium. Milk furnished the major share of calcium in diets in every region and every season. However, milk contributed a smaller proportion of the calcium in diets in the South than in other regions.

Breakfasts of teenage boys. Varied breakfast patterns were found among 121 boys, 12-14 years of age, from urban households in the North Central region that participated in the spring 1965 Nationwide Food Consumption Survey. On the one day for which their intake was recorded, 43 percent of the boys had a breakfast based on cereal and milk--the pattern most frequently encountered. More than half of this group added a fruit, a bread or both to the cereal and milk pattern. Nine times out of ten, the cereal was a ready-to-eat variety. Thirty-one percent of the boys selected a high protein breakfast--one including meat, eggs, cheese, peanut butter, or baked beans, singly or in combination. Usually milk and a bread or other bakery product were also included and often a breakfast cereal with or without fruit. About 16 percent of the breakfasts basically consisted of a bread (including pancakes and french toast) with milk or fruit or both.

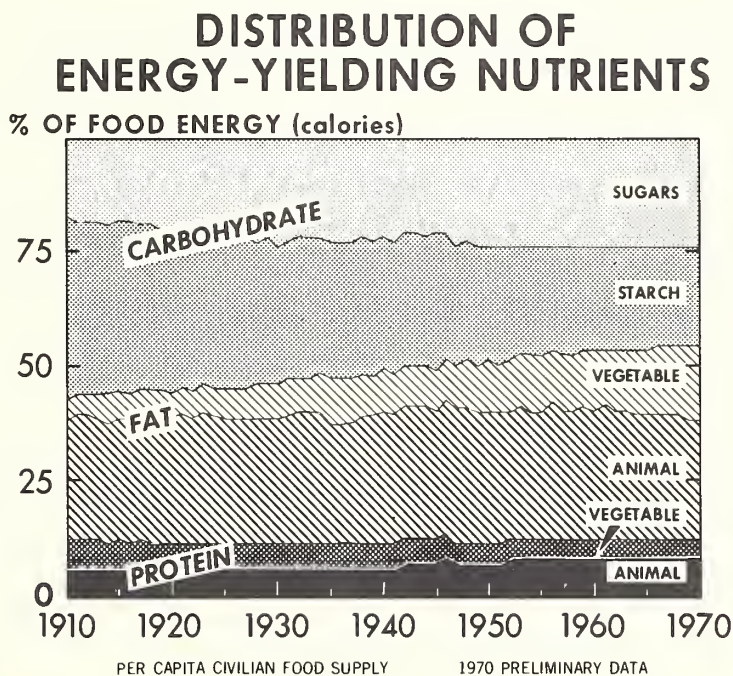
Milk was consumed by slightly more than 80 percent of the boys, either on cereal or as a beverage or both. Only 6 percent of these teenage boys drank coffee for breakfast and only about 30 percent ate fruit or a fruit substitute. Breakfast patterns in this group appeared to be unrelated to family income or family size.

Diet quality of low-income Negro families. Findings from a survey of 461 low-income Negro families in Bolivar, Leflore, and Tallahatchie Counties in Mississippi in the summer of 1969 indicate that the diets of these families were not as good as the diets of low-income rural nonfarm households in the South in the summer season of the 1965-66 USDA food consumption survey. The Mississippi families had lower levels per person of calories and of the seven nutrients studied than did families in the 1965-66 survey. Diets of the Mississippi families, especially the larger ones, were particularly low in calcium, vitamin A value, and ascorbic acid. The low averages on a per person basis for these nutrients can be accounted for in part by the high proportion of large families among those surveyed, and the low food intake of young children. Almost 50 percent of the three-county sample consisted of families with 6 or more persons and 16 percent had 10 or more persons. Basically, however, the low averages for calcium, vitamin A, and ascorbic acid were associated with limited household use of milk, green and yellow vegetables, and ascorbic acid-rich fruits and tomatoes. Although most of the families surveyed lived in rural areas, relatively little home-produced food was reported during the survey months of June, July, and August. Use of food stamps by eligible families also was relatively low, ranging from 34 percent in Tallahatchie County to 61 percent in Bolivar



County. Slightly over 90 percent of the families surveyed had incomes under \$3,000 the previous year. The study was conducted by Alcorn A & M College under a USDA-ARS grant.

Nutritive value of national food supply. Total food energy per capita per day in 1970 was 94 percent of the 1909-13 level. Carbohydrate accounted for 46 percent of the total food energy in 1970 compared with 56 percent in 1909-13, and fat for 42 percent in 1970 compared with 32 percent in 1909-13. The proportion of calories provided by protein remained relatively constant at 11 to 12 percent.



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The contribution of vegetable fats to total calories increased from 5 percent in 1909-13 to 16 percent in 1970. This increase is due mainly to increased use of margarine, vegetable shortening, and cooking and salad oils. Calories from animal fats remained relatively constant, accounting for 27 percent of total calories in 1909-13 and 26 percent in 1970.

Shifts in sources of fat and the increased use of fat resulted in a change in the fatty acid content of the food supply. The total saturated fatty acid content increased about 10 percent, the oleic acid content about 20 percent, and the linoleic acid content more than 100 percent between 1909-13 and 1970. The large increase in linoleic acid reflects the marked increase in the use of salad and cooking oils.

Starch and sugar each accounted for about half the total carbohydrate in 1970. In 1909-13, starch accounted for two-thirds of the total and sugar for one-third. The major factor in this change has been a steady decline in the use of starch-containing foods such as grain products and potatoes rather than an increase in the use of sugar. Within the last few years, however, the use of sugar and corn sweeteners has started to increase as grain and potato consumption levels off.

Food acceptance and food habits. To obtain further information about acceptance of foods offered in school lunches, estimates were made of the percentage of food remaining as plate waste in lunches served on one day to 1,770 tenth graders in 16 Louisiana high schools. The estimates indicated that the students consumed 46 percent of the salad, 72 percent of the vegetables, 72 percent of the dessert, 85 percent of the bread, 89 percent of the meat or meat alternate, and 95 percent of the milk served. On the average, girls ate less of each item than did boys. The study was conducted under a cooperative agreement between Louisiana State University and CFE.

In another study, groups of elementary school students, high school students, and parents in three geographic locations were interviewed in depth in an attempt to get clues as to why children accept the fruits and vegetables they do. Indications provided by this limited study were that parental attitudes toward food, parental influence on the child, sensory appeal of the food, appetite conditioning of the child, and socioeconomic level of the family are among the factors that influenced the children to accept or reject fruits and vegetables.

A nationwide survey is underway to obtain information on what homemakers know about foods and nutrition and what factors influence them in choosing foods for their families. This information is needed in designing nutrition education programs and in developing guidance materials.

### Nutrition Program News

Assistance was provided to three States in the development of nutrition education programs and the organization of nutrition committees. Coordination of nutrition education activities was promoted by the presentation of 13 talks to professional groups, four 8-minute and three 3-minute television shows, and thirty 3-minute-10-second radio shows, and by preparation of two 30-minute cassettes on understanding food habits included in the EDU-PAK series of the American Dietetic Association. The television and radio shows, which were designed to bring information on nutrition to the public, were distributed nationwide.

Bimonthly publication of Nutrition Program News continued. Topics covered in the four issues printed during the reporting period are given in the list of publications on page 9.

### Food Use

Homes and institutions. Nine publications that provide a wide variety of information on buying, storing and using food in homes and institutions were developed, expanded or completely revised during the year ending June 30. Five

Home and Garden Bulletins give information on how to select, store, and use cheese, eggs, milk, poultry, and vegetables in family meals. Two bulletins will provide the homemaker with information on freezing combination main dishes and baking bread, pies, and cakes. An eighth Home and Garden Bulletin will provide information, including recipes for 25 servings, to help homemakers and managers of institutions who are faced with the problem of preparing meals for small groups on a limited budget. A Home Economics Research Report, which is being printed on 5- x 8-inch cards for the convenience of users, provides preparation procedures and recipes for 100 servings for institutional use for a large variety of foods.

Child-feeding programs. A completely updated version of "Quantity Recipes for Type A School Lunches" has been developed by CFE and will be issued jointly by ARS and the Food and Nutrition Service. The publication includes about 320 recipes, many of them entirely new, for cereal products, desserts, main dishes, salads, salad dressings, sandwiches, soups, and vegetables. Two suggested menus accompany each recipe for an entree which contains the meat or meat alternate component of the lunch. Additional supplementary material includes portioning information; guides for increasing or decreasing a recipe size; data on different forms of milk and eggs; use of a convection oven; and time-tables for cooking meat, poultry, fish, and vegetables. This publication is being issued as a card file and is designed to help the school lunch managers in the approximately 80,000 schools participating in the National School Lunch Program prepare meals that supply the kind and amount of foods boys and girls need to meet the goal of the Type A lunch.

Low-income families. Food preparation instructions and recipes were developed for a publication for low-income elderly persons. Special features of the recipes are their practical two-serving size, versatility of ingredients, quick and easy preparation, and top-of-range cooking. Initially, this publication, which is to be issued by the Food and Nutrition Service, will be used in a pilot program on home delivery of donated foods to elderly recipients. Later, it will be used in a nationwide promotion of good nutrition.

### Publications

#### Food Consumption and Dietary Levels

Dietary Levels of Households in the South, Spring 1965. Consumer and Food Economics Research Division. Household Food Consumption Survey 1965-1966 Rpt. 9, 117 pp., illus. July 1970.

Dietary Levels of Households in the West, Spring 1965. Consumer and Food Economics Research Division. Household Food Consumption Survey 1965-1966 Rpt. 10, 117 pp., illus. Nov. 1970.

BELOIAN, A. M. Seasonal Variations in U.S. Diets. Family Economics Review, ARS 62-5, USDA, pp. 25-29. March 1971.

BELOIAN, A. M. Seasonal Food Indexes: Money Value of Food and Quantities of Selected Foods Consumed Per Housekeeping Household in a Week, United States, 1965-66, table 802. Agricultural Statistics, p. 579. 1970.



BROWN, M. L., et al. Diet and Nutrition of Preschool Children in Honolulu: Survey of Low- and Middle-Income Families. Amer. Dietet. Assoc. Jour. 57: 22-28. July 1970.

PAO, E. Breakfast Patterns of Boys in the North Central Region. Family Economics Review, ARS 62-5, USDA, pp. 10-11. Dec. 1970.

SMITH, D. S. and BROWN, M. L. Anthropometry in Preschool Children in Hawaii. Amer. Jour. Clin. Nutr. 23: 932-939. July 1970.

SWOPE, D. A. Trends in Food Consumption and Their Nutritional Significance. Proc. of 23rd Ann. Reciprocal Meat Conf. of the Amer. Meat Sci. Assoc., Univ. of Fla., Gainesville, Fla., June 23-26, 1970, pp. 154-172. [1971].

SWOPE, D. A. Nutrition as a Marketing Tool for Potatoes. Proc. of 20th Ann. National Potato Utilization Conf., Riverside, Calif., July 29-31, 1970; ARS 74-55, pp. 93-110. Jan. 1971.

WARD, C. Better Diets Possible by Shifting Food Expenditure Pattern. Family Economics Review, ARS 62-5, USDA, p. 13. Dec. 1970.

#### Food Management

REDSTROM, R. Food Canning by U. S. Households. Family Economics Review, ARS 62-5, USDA, pp. 15-16. Sept. 1970.

REDSTROM, R. A. Practices in the Use of Homefreezers: Farm and Urban Owners of Freezers in a Selected Area of Indiana. Home Econ. Res. Rpt. 38, 30 pp. June 1971.

REDSTROM, R. Home Food Preservation in U.S. Households. Family Economics Review, ARS 62-5, USDA, pp. 12-17. June 1971.

#### Nutritive Value of National Food Supply

Food Nutrients: Quantities Available for Consumption Per Capita Per Day, United States, 1954-1969, table 797, and Food Nutrients: Percentage of Total Contributed by Major Food Groups, Average 1957-59, Annual 1969, table 798. Agricultural Statistics, pp. 574-575. 1970.

Consumption of Food Energy, Protein, Fat, and Carbohydrates, figure 2; Sources of Protein, figure 3; Consumption of Calcium, Vitamin A, Thiamin, and Ascorbic Acid, figure 4. Supplement for 1969 to Food Consumption, Prices, Expenditures, Agricultural Economic Rpt. No. 138. Economic Research Service, USDA, pp. 72-73. Jan. 1971.

Nutrients Available for Consumption Per Capita Per Day, 1960-69, and Percentages of Total Nutrients Contributed by Major Food Groups, 1965-69. Supplement for 1969 to Food Consumption, Prices, Expenditures, Agricultural Economic Rpt. No. 138. Economic Research Service, USDA, tables 38 and 39, pp. 30-32. Jan. 1971.

Nutrition--Nutrients Available for Civilian Consumption Per Capita Per Day; 1940 to 1969. Statistical Abstract of the U. S., table 119, p. 84. 1970.

FRIEND, B. Nutritional Review. National Food Situation, NFS-134: 21-25. Economic Research Service, USDA. Nov. 1970. Reprinted as CFE(Adm.)-299-5, 8 pp. 1971.

#### Food Acceptance and Food Habits

JOHNSON, L. F. Influence of Two Menu Types on Plate Waste of Tenth Graders in Sixteen Louisiana High School Lunch Programs. (Master's Thesis, Louisiana State University.) 1970.

VALENTI, D. B. Contributions of the School Lunch to the Nutritional Needs of Tenth Graders in Sixteen Louisiana High Schools. (Master's Thesis, Louisiana State University.) 1971.

#### Nutrition Program Service

Consumer and Food Economics Research Division, ARS, USDA, 1970-71. Nutrition Program News, four issues -- July-October 1970, 8 pp; Nov. 1970-Feb. 1971, 4 pp.; March-April 1971, 4 pp.; May-June 1971, 4 pp.

HILL, M. and CLEVELAND, L. Food Guides--Their Development and Use. July-Oct. 1970, pp. 1-5.

HILL, M. Tools for Nutrition Education--Some Examples. Nov. 1970-Feb. 1971, pp. 1-4.

STEWART, M. Nutrition and Learning--Implications for Schools. March-April 1971; pp. 1-4.

STEWART, M. Nutrition Education by Non-Professional Aides. May-June 1971, pp. 1-4.

#### Food Use

Storing Perishable Foods in the Home. Consumer and Food Economics Research Division. Home and Garden Bul. 78, 9 pp. Rev. Apr. 1971.

Thrifty Family Series: Food and Nutrition Service and Agricultural Research Service cooperating. FNS-14 to 33, and FNS-35 to 37 revised March 1971; FNS-34 (new) issued March 1971.

#### Milk group:

Cheese: A good choice for the thrifty family. FNS-14. 4 pp., illus.

Evaporated milk: A good choice for the thrifty family. FNS-15, 4 pp., illus.

Instant nonfat dry milk: A good choice for the thrifty family. FNS-16. 4 pp., illus.

Nonfat dry milk (noninstant): A good choice for the thrifty family. FNS-17. 4 pp., illus.



Fruit and vegetable group:

Fruits: A good choice for the thrifty family. FNS-18. 4 pp., illus.

Vegetables: A good choice for the thrifty family. FNS-19, 4 pp., illus.

A variety of fruits and vegetables: Some good choices for the thrifty family. FNS-20. 4 pp., illus.

Raisins: A good choice for the thrifty family. FNS-21. 4 pp., illus.

Meat group:

Canned chopped meat or canned luncheon meat: A good choice for the thrifty family. FNS-22. 4 pp., illus.

Dry beans: A good choice for the thrifty family. FNS-23. 4 pp., illus.

Beef and pork: A good choice for the thrifty family. FNS-24. 4 pp., illus.

Eggs: A good choice for the thrifty family. FNS-25. 4 pp., illus.

Fish: A good choice for the thrifty family. FNS-26. 4 pp., illus.

Peanut butter: A good choice for the thrifty family. FNS-27. 4 pp., illus.

Poultry: A good choice for the thrifty family. FNS-28. 4 pp., illus.

Dry split peas: A good choice for the thrifty family. FNS-29, 4 pp., illus.

Bread-cereal group:

Enriched all-purpose flour: A good choice for the thrifty family. FNS-30. 4 pp., illus.

Donated cracked wheat bulgur: A good choice for the thrifty family. FNS-31. 4 pp., illus.

Enriched corn grits: A good choice for the thrifty family. FNS-32. 2 pp., illus.

Enriched cornmeal: A good choice for the thrifty family. FNS-33. 4 pp., illus.

Enriched macaroni: A good choice for the thrifty family. FNS-34. 4 pp., illus.

Enriched rice: A good choice for the thrifty family. FNS-35. 4 pp., illus.

Rolled oats: A good choice for the thrifty family. FNS-36. 4 pp., illus.

Donated rolled wheat: A good choice for the thrifty family. FNS-37. 4 pp., illus.

# FOOD COMPOSITION, FOOD BUDGETS, AND GUIDANCE FOR FOOD PROGRAMS

## Problems and Objectives

An increasing number of studies designed to provide knowledge about the relationship of food eaten by people to their physical and mental development and well-being are reported in the literature. Interpretation and evaluation of the findings and guidance in applying those with implications for food and nutrition programs are of vital importance if people are to obtain the greatest benefits from this research. Developments in cultural, breeding, and manufacturing practices introduce new food products and changes in the composition of others. The number of nutrients recognized as important continues to increase. Representative nutritive values that reflect these developments as well as the latest developments in analytical techniques are required for application in a variety of problems. Source materials such as food budgets and dietary guides based on advancing knowledge are needed for use in nutrition and consumer programs.

Major objectives of the research include:

1. Development of representative nutritive values for all types of foods.
2. Development of food guides and food budgets.
3. Review and interpretation of research findings on food and nutrition for application to and evaluation of action programs such as child feeding and commodity distribution to needy families.

## Progress

### Tables of Food Composition

Work on updating and expanding the Division's tables of food composition is proceeding along several lines. Preparation of data for the Handbook, "Composition of Household Measures and Market Units of Foods," is now complete and writing of the text is underway. Included are data on the nutrient content of from one to four units or size portions for more than 1,600 food items.

Arrangements are being made to issue a tape of nutrient values which will be essentially an expanded version of Agriculture Handbook No. 8, "Composition of Foods--Raw, Processed, Prepared." Where values for nutrients for some foods had been omitted in Handbook 8 because of limited data, the best estimates now available are being inserted on the tape. The tape is intended primarily for use in computer-menu planning.

Plans are being developed to issue the next edition of AH-8 in loose-leaf form. All data for a given food item will be on the same sheet and there will be separate sheets for each food item. This arrangement will make it possible to update and supplement nutrient values and to add new foods at frequent intervals.

An intensive search is underway for data needed in revising and expanding Agriculture Handbook No. 102, "Food Yields Summarized by Different Stages of Preparation," published in 1957.

Work to provide data on the proximate composition and major mineral element content of raw and cooked chicken parts, which is being carried out by Virginia Polytechnic Institute under a contract with ARS, has been expanded to include analyses for three trace elements--namely, copper, manganese, and zinc. At the University of Hawaii, work has been initiated under a research grant, to obtain analytical data on nutrient content of foods of most importance to the various ethnic groups in Hawaii. These data will supplement data previously published by the Hawaii Agricultural Experiment Station.

#### Food Budgets and Guidance for Food Programs

The U. S. average cost for the low-cost plan for a family of four with school children increased 1 percent from March 1970 (\$30.80 a week) to March 1971 (\$31.10). A similar increase in the cost for the economy plan, used as a basis for Food Stamp Program allotments in the continental U.S., resulted in a cost of \$24.90 a week or \$108 a month in March 1971. Estimates, based on the limited data available, showed the cost of the economy plan to be about 35 percent higher in Hawaii, Alaska, and Guam, and about 15 percent higher in the Virgin Islands than in the continental U. S. In Puerto Rico, the cost of the plan was about the same as in the continental U. S.

The cholesterol, saturated fatty acids, oleic acid, and linoleic acid contents of foods in the food plans for the man were estimated. Levels of cholesterol and saturated fatty acids for the plans were low in relation to average intakes of men reported in the USDA nationwide survey in 1965, but higher than recommended by the Inter-Society Committee of Heart Disease Resources released in December 1970. The relationship of linoleic acid to saturated fatty acid was found to be the same in the food plans and in foods reported in the survey.

Information on meal planning and food shopping has been brought together in a new publication "Your Money's Worth in Foods" for consumers interested in serving nutritious meals to their families while economizing on food. Included in the publication are: Estimates of how much families at different income levels might reasonably spend for food, guides for planning well-balanced meals on a food budget, and information on how to shop wisely for meat, meat alternates, milk, milk products, vegetables, fruit, bread, and cereals. Tables are presented from which the cost of a serving of meat and of fresh fruit and vegetables can be determined if the price per pound is known. A table for determining the unit price of foods from containers of different weights is also given. Costs of a serving of foods that might be used interchangeably in meals are compared using 1970 prices. Such comparisons

are made for milk and milk products, meat, vegetables, and fruits. Plans are to revise the publication periodically to keep information on food costs current. Teachers, extension workers, and others helping families plan to use their food money wisely are expected to make use of this bulletin, in addition to the homemaker.

Basic data were provided to the National Academy of Sciences--National Research Council (NAS-NRC) for use in developing guidelines for nutritional quality of processed foods. Included were estimates of (1) nutrients per 100 calories provided by 44 classes of food, as used by U. S. households; (2) nutrients per 100 calories provided by 12 classes of food, as eaten by each of 19 age-sex groups; (3) nutrients per 100 calories and calories per serving provided by main dishes prepared from home and institution recipes and by selected commercial plate dinners. In developing these estimates, data were used from the Division's nationwide surveys of the food consumption of households and individuals, recipes for consumer use and for use in the Department's Child-Feeding Programs, and tables of nutritive values of foods. The NAS-NRC research is being carried out for the Food and Drug Administration.

### Publications

#### Tables of Food Composition

Nutritive Value of Foods. Consumer and Food Economics Research Division.

Home and Garden Bul. 72, 41 pp., illus. Rev. Aug. 1970. Sl. rev. Jan. 1971.

FEELEY, R. M. and WATT, B. K. Nutritive Values of Foods Distributed Under USDA Food Assistance Programs. Amer. Dietet. Assoc. Jour. 57: 528-547. Dec. 1970.

HARTUNG, T. E. and DEWAN, S. Chemical and Physical Composition of Young Turkeys. Poultry Sci. 49: 1394. Sept. 1970. Abstract of paper presented at 59th Ann. Meet., Poultry Sci. Assoc., Aug. 31-Sept. 4, 1970, Knoxville, Tenn.

#### Nutritive Value of Meals as Served

MURPHY, E. W., PAGE, L., and WATT, B. K. Major Mineral Elements in Type A School Lunches. Amer. Dietet. Assoc. Jour. 57: 239-245. Oct. 1970.

MURPHY, E. W., PAGE, L., and WATT, B. K. Trace Minerals in Type A School Lunches. Amer. Dietet. Assoc. Jour. 58: 115-122. Feb. 1971.

MURPHY, E. W., WATT, B. K., and PAGE, L. Regional Variations in Vitamins and Trace Element Content of Type A School Lunches: Trace Substances in Environmental Health IV, Proceedings of University of Missouri's 4th Annual Conference on Trace Substances in Environmental Health, Columbia, Missouri, June 23-25, 1970, pp. 194-205. 1971.



## Food Budgets and Food Guides

Cost of Food at Home. Family Economics Review, ARS 62-5, USDA, p. 18, Sept. 1970; p. 25, Dec. 1970; pp. 35-36, March 1971; and p. 27, June 1971.

Cost of 1/3 of A Day's Protein. Handbook of Agricultural Charts. Agriculture Handbook 397, USDA, p. 61. 1970.

Food Plans: Food Cost at Home at Three Cost Levels. Agricultural Statistics, USDA, table 801. 1970.

Your Money's Worth in Foods. Consumer and Food Economics Research Division. Home and Garden Bul. 183, 25 pp. Dec. 1970.

CHASSY, J. Distribution of the Food Dollar by Families in Four Regions and in the Low-cost Food Plan. Family Economics Review, ARS 62-5, USDA, pp. 13-15. Dec. 1970.

HILL, M. M. and CLEVELAND, L. E. Food Guides--Their Development and Use. Nutrition Program News. Consumer and Food Economics Research Division, ARS, USDA. 8 pp. July-Oct. 1970.

PETERKIN, B. The Cost of Meat and Meat Alternates. Family Economics Review, ARS 62-5, USDA, pp. 11-12. Sept. 1970.

PETERKIN, B. Ready-To-Eat Breakfast Cereals in U. S. Diets. Family Economics Review, ARS 62-5, USDA, pp. 8-9. Dec. 1970.

PETERKIN, B., and CROMWELL, C. Convenience and the Cost of Food. Family Economics Review, ARS 62-5, USDA, pp. 9-11. June 1971.

## USE OF FAMILY RESOURCES

### Problems and Objectives

Information on the resources available to families, the decisions families make regarding their use, and the levels of living provided are needed to develop programs to improve levels of living.

Major objectives of the research are to--

1. Determine the effects of economic and psychosociological factors on the allocation of family resources.
2. Identify the family financial management patterns that are associated with desirable levels of living.
3. Identify the levels of living obtainable in different socioeconomic situations.



## Progress

### Rural Family Living Studies

Economic status. A series of ten short and easily answered indicator questions has resulted from research to develop a simple method of predicting the approximate value of goods and services consumed by rural families. A measurement of the value of families' consumption is the best determination of economic status but obtaining such information has been too time-consuming and costly to be practical. Consequently, income commonly has been used as the measure of economic status. Because families live on accumulated holdings and future expectations as well as on current income, it is an inexact measure. When the ten indicator questions were tested in North Carolina, the responses were found to predict consumption more accurately than did income. The ten questions tested were:

1. How many cars or trucks are owned by members of your family?
2. What is your average telephone bill?
3. What is your average electricity bill in the summer months?
4. During a normal week how much does your family spend on food at home?
5. How many admissions to sports events, movies, plays, and similar recreational events did adult members of your family buy in the past year?
6. The grade of construction of the house? 1/
7. What was your net family income in the last year? 2/
8. Do you have color television?--black and white television?
9. What rooms in your home are carpeted?
10. How much would you expect to pay for a suit for an adult man?

Research is continuing at Research Triangle Institute under a USDA-ARS contract to determine whether this series of questions is suitable for nationwide use.

Housing. Analysis of data on housing obtained in the course of the research on the economic status of families is underway to identify housing characteristics associated with selected socioeconomic characteristics of families. A major objective is to identify population groups most in need of improved housing. This research is being carried out by North Carolina State University under a USDA-ARS grant.

1/ Determined by the interviewer.

2/ A card permits the respondent to place the family in 1 of 14 intervals.

The yearly estimate of the value of housefurnishings on farms for the 48 contiguous States was prepared for the Balance Sheet of Agriculture.

### Management of Family Resources

Effect of debt repayment on food expenditures. A study of the credit practices and food expenditures of 343 Oklahoma families suggests that, on the average, each dollar spent on debt repayment diverted 7 cents from expenditures. In families of husband and wife only, food expenditures were decreased by 25 cents for each dollar of debt paid back, but in families with one or two children under 6 years of age, there was no decrease in food spending associated with debt repayment. Families with incomes of \$10,000 and over decreased food expenditures by 13 cents for every dollar of debt paid back but families with incomes under \$5,000 increased food spending with debt repayment. These findings should be confirmed in a larger study.

Only one family in eight which assumed new debt during the year expected to cut its usual expenditures to meet installment payments but one in three reported having to make unplanned cuts. Food was the area most often cut.

This research is being conducted under a cooperative agreement between Oklahoma State University and CFE.

Cost of raising a child. Estimates of 1960-61 and 1970 costs of raising a child in an average size, husband-and-wife family are now available for three urbanizations and four regions at the economy, low-cost, and moderate-cost levels. Estimates of the 1960-61 and 1970 costs for raising a child by number of children in the family are also available for two regions (North Central and South) for the same urbanizations and cost levels. All estimates give costs for each of a child's first 18 years by major categories of consumption. As family size increased, costs of raising a child through the first 18 years decreased. Of the major components, food costs decreased the least and housing and transportation costs the most. Costs per child in 5-child families averaged 20 to 24 percent below costs in 2-child families. Costs of raising a farm child at 1970 prices in a 3-child family in the North Central region were \$21,900 at the low-cost level and \$32,220 at the moderate-cost level.

Resource conservation and augmentation. On the hypothesis that conservation and augmentation of resources within the household may help a family rise out of poverty, 30 rural homemakers, half upwardly mobile and half apparently mired in poverty, were observed as they performed household tasks. Resource conserving and augmenting activities were engaged in significantly more frequently by those who were upwardly mobile. This type of activity was also more common among those who had relatively more education, and those whose conversation while working indicated a relatively high level of concern for the future and a focus on preference rather than on fact. This study was conducted by Michigan State University under a USDA-ARS grant.

## Family Economics Review and Outlook Conference

Family Economics Review was published quarterly. The Division was responsible for planning and conducting four sessions on family living at the February 1971 Annual Outlook Conference and for the presentation of two papers.

## Publications

### Rural Family Living Studies

MORK, L. F. and PENNOCK, J. L. Expenditures and Value of Consumption of Farm and Rural Nonfarm Families in North Carolina, Family Economics Review, ARS 62-5, USDA, pp. 5-9. Sept. 1970.

### Management of Family Resources

Selecting and Financing a Home. Consumer and Food Economics Research Division. Home and Garden Bul. 182, 24 pp. Dec. 1970.

COURTLESS, J. C. The Effect of Consumer Credit on Food Expenditures. A talk at the National Agricultural Outlook Conference, February 1971, 5 pp. Washington, D.C. Also in Family Economics Review, ARS 62-5, USDA, pp. 22-24. March 1971.

MORK, L. Figuring the Cost of Doing Laundry at Home. Family Economics Review. ARS 62-5, USDA, pp. 6-7. Dec. 1970.

PENNOCK, J. Child-Rearing Costs at Two Levels of Living, by Family Size. Family Economics Review, ARS 62-5, USDA, pp. 16-18. Dec. 1970.

WALKER, K. E. How Much Help for Working Mothers? The Children's Role. Human Ecology Forum 1: 13-15. Autumn 1970.

### Clothing Acquisitions and Clothing Budgets

WINAKOR, G., MACDONALD, N. M., KUNZ, G. I., and SALADINO, K. B. Clothing Budgets for Members of Low-income Families in Midwestern Cities. Jour. Home Econ. 63: 354-362. May 1971.

WINAKOR, G., MACDONALD, N. M., KUNZ, G. I., and SALADINO, K. B. Development of Low-Income Clothing Budgets. Jour. Home Econ. 63: 256-262. April 1971.

## Family Economics Review and Outlook Conference

Family Economics Review. ARS 62-5. Consumer and Food Economics Research Division, ARS, USDA. Four issues--Sept. 1970, 20 pp.; Dec. 1970, 28 pp.; March 1971, 36 pp.; June 1971, 28 pp.

The Family. Section 4 in Handbook of Agricultural Charts 1970. Agriculture Handbook No. 397. Figures 64-74, pp. 57-63, Nov. 1970.

BRITTON, V. Clothing and Textiles: Supplies, Prices, and Outlook for 1971.  
A paper for the National Agricultural Outlook Conference, February 1971,  
8 pp. Also in Family Economics Review, ARS 62-5, USDA, pp. 9-13. March  
1971.

HOLMES, E. The Family Economics Review Evaluation Survey. Family Economics  
Review, ARS 62-5, USDA, pp. 3-4. Sept. 1970.

KRASSA, L. Recent Changes in the Housing Situation. Family Economics Review,  
ARS 62-5, USDA, pp. 18-21. June 1971.

PENNOCK, J. Sources of Expenditure Data. Family Economics Review, ARS 62-5,  
USDA, pp. 3-5. Dec. 1970.